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Vaccination Campaigns in Postsocialist Ukraine:

Health Care Providers Navigating Uncertainty

Vaccination anxieties grew into a public health issue during the 2008 failed measles and rubella immunization campaign in Ukraine. Here I explore how health care providers bend official immunization policies as they navigate media scares about vaccines, parents' anxieties, public health officials' insistence on the need for vaccination, and their own sense of expertise and authority. New hierarchies are currently being renegotiated, and I follow health care providers as they attempt to parcel out their new position in the Ukrainian society and beyond. Public health control is reframed in a postsocialist context as a condition of acceptance into the European community as a sanitary democracy, and a contestation point between citizens and state. I untangle how relationships between citizens and states shape the construction of medical risk. [vaccination anxieties; health care providers; postsocialism; Ukraine]

Forty-six thousand people contracted measles and rubella in Ukraine in 2005 and 2006, leaving four dead. The majority of the infected were of school and college age (Polevska 2007:15[221]). Given an insufficient herd immunity at 93 percent (Velicko et al. 2008) linked to Soviet immunization policies and practices, the Ukrainian Ministry of Health designed a mandatory measles and rubella campaign aiming to immunize 95 percent of young people with funds of the WHO. Ukraine's European Union membership ambitions at the time and preparations to host the European Soccer Cup in 2012 created special urgency for this epidemiologic intervention.

Bay Pediatric policlinic is located in one of the most populated suburbs of Kyiv and serves nearly 15,000 people (Figure 1). The neighborhood population has been swollen by new construction and a promised subway station, anecdotally said to open before the next Kyiv Mayor election. With a large sculpture of mother and child at the front way, the policlinic's standard building is easily recognizable as a health care institution erected in Soviet times. Busy bus stops surround it, and a steady flow of people hurries in, out, and past the clinic. The usual in post-Soviet urbanscape entryways into several smallish pharmacies and a dentist's office create a hybrid building façade with nonmatching windows and doors, some conspicuously modern and others neatly painted over previous layers of paint in an attempt to keep up dignified appearance. Looking onto the visitors and passers-by are smiling families from the pharmaceutical advertising posters.

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Figure 1. Mother and Child monument in front of one of the Ukrainian pediatric clinics.

Uliana and Valentyna share the office as heads of two pediatric units in this clinic. Over 20 years of practice are under their belts. When our conversation turns to the rampaging antivaccination sentiments in the country, Valentyna promptly pulls out a copy of the vaccination refusal form from the well-stocked pile in her desk drawer. The form has been obviously photocopied multiple times. The form reads: "I (parent's name) refuse vaccination (name of the procedure) of my child (child's name). Hospital staff informed me about consequences of my refusal. In the event that my child contracts the associated disease, I accept full responsibility for health and life of my child." Date and signatures of parent and hospital staff follow. The significance of the form can be fully appreciated only when we acknowledge its rarity in postsocialist context. Soviet medical practice enforced compliance, and individual versus group logic was admonished. Today, people have new ways of expressing their liberties, and vaccination refusals are one of them. The Ministry of Health statistics cite vaccination compliance numbers in the high 90th percentile for most standard vaccinations in the national schedule.[1] However, local sources (Chukhlib 2008) report that at least 30 percent of parents reject vaccination. Pediatricians who participated in this study echo this statistic, saying that nearly half of their patients hesitate about having vaccinations. Although these statistics are gathered via journalistic methods, they nevertheless give us a vision of attitudes toward vaccinations that competes with the official narrative.

This article investigates vaccination anxieties in postsocialist context spurred by the mandatory measles and rubella campaign (Seminog 2008). The campaign unfolded in May 2008 when Minzdrav (Ministry of Health) attempted to vaccinate large number of young people at the WHO's recommendation. Media attention to population anxieties, alleged side effects of the vaccine, and finally a death popularly linked to such side effects, brought the campaign to an end. Vaccination anxieties have grabbed headlines in the West as well, and have been linked to fears of overwhelming the immune system and causing developmental disorders in children (Blackford 2001; Park 2008). Postsocialist context offers an especially rich environment for investigation of vaccination refusals as a reflection of suspicion of authority, both local and international, changing social hierarchies, and worries about the status of the newly emerged states in global geopolitics.

Infectious disease control has become an international security issue that guides foreign policies (Briggs 2005). Vaccines are manufactured, circulated, and monitored on a global scale. Researchers critically evaluating vaccination anxieties often discuss them as deficit of trust, as locally embedded rationalities that diverge from biomedical understanding of risk and well-being, and as rumors that testify to resistance and challenge of the dominant discourse (Brownlie and Howson 2005; Das and Das 2003; Feldman-Savelsberg et al. 2000; Yahya 2007). An alternative view considers vaccination anxieties not from a deficit viewpoint but, rather, as a productive locus for investigation of different forms of knowledge, values, and social commitments (Kaufman 2010; Leach and Fairhead 2007). The shared understanding of social scientists is that vaccination anxieties are bodily, social, and political at the same time (Leach and Fairhead 2007:2). Scholars generally agree in their critical attention to vaccination technocracies that accompany immunization schedules (international institutional and governance regimes), techniques of ensuring compliance, and understanding how technologies' meanings are transformed in social settings. My research shares these concerns and joins scholars who view vaccination anxieties as a fruitful field for exploring the ways in which domestic and international public health policies interact with local developments shaping people's ideas of risk and well-being.

I explore how health care providers bend official immunization policies as they navigate media scares about vaccines, parents' anxieties, public health officials' insistence on the need for vaccination, and their own sense of expertise and authority. Health care providers are involved in changing "regimes of truth . . . as moral orders—norms and presuppositions about the rights, responsibilities, and conduct of individuals and institutions" (Koch 2006). They make sense of vaccination anxieties by employing rationalizations that stem from their personal observations as well as racialized constructions of biomedical knowledge, rather than national policy recommendations. I untangle how concepts of health risks come to be, and how relationships between citizens and states shape the construction of biomedical risk. These practices shed light on the ambiguities of public health management in postsocialist space and illustrate the consequences of the political enthusiasm to align local centralized health care systems with Western standards. Public health control is reframed in a postsocialist context as a condition of acceptance into the European community as a sanitary democracy, and a contestation point between citizens and

state. Vaccination anxieties and circulation of knowledge in a neoliberal framework are a prism through which these theoretical issues will be addressed.

Methods

This research is based on ethnographic fieldwork data I collected in the central and western parts of Ukraine in 2007–08. It developed as a part of a larger project that aimed to identify factors associated with women's increasing participation in the biomedical field in a postsocialist context. My objective was to understand the relationship between social and economic domains (local gender norms, professional prestige, socioeconomic status, family, etc.) and the decision to practice biomedicine among women who entered the practice in postsocialist Ukraine and those who began their careers in the Soviet Union, as compared to men. To explore how lucrative the biomedical profession is according to the local standards, I asked about changes occurring in health care. I initiated my fieldwork research by conducting a series of open-ended interviews with a free-listing component, where my respondents selected their own starting points salient to them. Vaccination campaigns were not my initial focus; however vaccination anxieties emerged as a major issue of concern during many interviews.

I collected over 150 semistructured interviews myself, lasting anywhere from 45 minutes to four hours and longer. All interactions were in Ukrainian or Russian,[2] and translations are my own. During interviews, many topics pertaining to medical practice in postsocialist context were discussed because of the goals of the larger study. Yet, the broad scope of conversations proved to be revealing in many ways. Informants were recruited through announcements and distribution of my contact information with assistance of a helper and through chain referral. I chose quota sampling as a main participant selection principle. Because gendered aspects of the profession were an essential component of my research design, I sought to interview men and women in the approximate percentage that they are represented in the field (30 percent and 70 percent, respectively). The majority of people I interviewed were practicing physicians of various specialties. I also interviewed eight medical students, 38 physicians who held administrative positions, and four retired physicians. I routinely encountered people who had made vaccination decisions in the past several years and who commented on their experiences. I made efforts to randomize the selection of participants by randomly selecting the individuals referred to me within each quota sample category. Because the MR campaign was stopped shortly after it began in the Eastern region of Ukraine, no one in my study had been subjected to it. Yet, the debates surrounding the campaign influenced their vaccination decisions.

I observed work in state-run policlinics, inpatient hospital facilities, research hospitals, private clinics, and private doctors' offices at the primary and secondary location sites (Kyiv, the capital of Ukraine with population close to three million; and Vinnytsia, a large peripheral town in central Ukraine with population of 814,000; see Ukrainian Statistical Committee 2011). I also made regular visits to two health care facilities at the secondary site (one oblast-level clinic and one private policlinic); and two facilities at the primary site (one city-level large hospital; and one city-level policlinic). I was able to see some of the daily routines of the physicians,

observe their communication with other doctors, medical staff, patients, and with the visitors to the health care facilities. Some physicians invited me to accompany them on overnight shifts and introduced me to other health care professionals at their work places and their social networks. The main data set used for this analysis is the interviews and interactions with health care providers. To understand the public discourse on current developments in biomedicine, I have regularly referred to major national press, including: weekly journals *Korrespondent, Focus, Ukraiynskyi Tyzhden, Profil*; popular newspapers *Den, Dzerkalo Tyzhnya, Vysokyi Zamok, Vseukrayinska Gazeta VV, Express, Kyiv Weekly, Business Ukraine*; specialized medical periodicals *Novyny Medytsyny i Farmatsiyi, Zdorov'ya Ukrayiny, Vashe Zdorov'ya*; popular press for parents of young children *Khoroshie Roditeli, Moi Rebenok*, and many others.

Research Setting: Immunization in the Soviet Union

The Soviet Union prided itself on being at the frontline of immunization research (Agol and Drozdov 1993; Hoch 1997; Torgunova 1967). Public health was one of the main foci of its socialist revolutionary government that came to power in 1917, consistent with the ideology of equal access to resources, the prioritization of the working class, and the dire epidemiologic situation. Lenin's oft-cited proclamation, "Either the lice will defeat socialism, or socialism will defeat the lice," highlights the Bolshevik preoccupation with the health of the masses. Preventative medicine, especially prophylaxis of infectious diseases, became the key, and included a special interest in burgeoning immunization techniques (Kravchenko and Saltykov 1967). As early as 1919, the Commissariat of Public Health initiated mass vaccination against smallpox, tuberculosis in late 1930s (Torgunova 1967), diphtheria (1940), pertussis (1955), polio (1956), and measles and mumps (1970; see Brinton and Ladyzhensky 1992).[3]

Soviet immunization policy was shaped by multiple considerations, including public health needs, socialist ideology, and cold war politics. Expansive and fast industrialization was the main target of Soviet government, so consumer needs and services received little attention. Housing was problematic, and food production was uneven. Immunization campaigns, along with other public health initiatives, were relatively inexpensive and efficient ways of demonstrating the care of the state for its citizens and thus reaffirming its legitimacy (Hoch 1997). Emily Martin (1994) argues, in U.S. context, that immunization is conceived socially as the education of the immune system to maximize the body's flexibility in production. Similar to the United States, the Soviet Union has promoted the core values of hard work, achievement, and self-improvement, even though in the United States this ideology targets an individual and in the USSR it targets a group. Vaccination campaigns are understood as safeguards of workers' health, and thus production.

Socialist ideology placed public health well before that of the individual. Consent was hardly a matter of consideration; however, even reports by the U.S. governmental agencies, which could be highly interested in discrediting the Soviet approach to immunization, pointed out that the Soviet "population had a high degree of health-care consciousness and was largely . . . amenable as far as participation is concerned" (Hoch 1997). An extensive immunization schedule was therefore one

of the priorities of the Soviet state, because it fit well with the ideology that valued the group over the individual, and promised a cheap way to secure the health of the labor force. Although coercion was a regular technique in the Soviet public health arsenal (Field 1967), subtler strategies were more common, including systematic surveillance and careful social marketing (Starks 2008).

The Soviet Union initially joined the WHO in 1948, the year of its conception, but withdrew because of Stalinist regime until 1956. When the Soviet Union rejoined the WHO, it quickly became one of its most active members. For instance, it insisted on reinvigorating and executing the smallpox eradication campaign as a WHO effort (Brown et al. 2006). Soviet Union utilized both its cooperation with the WHO and its domestic production of vaccines in foreign politics to further its claims as a world leader and to showcase an allegedly successful socialist regime at work. The Soviet Union never depended on imported vaccines, even though it did use foreign inventions for developing domestic production of vaccines (Agol and Drozdov 1993). It regularly pledged millions of vaccine doses to underdeveloped countries (Cameroon, Uganda, India, Burma, Nepal, Afghanistan, Sudan, Burundi, Iraq, Zambia, etc.; see Hoch 1997; Kravchenko and Saltykov 1967). This former Soviet prominence in the international immunization arena is an important factor in current relationships between local and foreign public health experts. Ukraine in particular, along with other Soviet Republics in the European part of the USSR, has had an upper hand in national public health management (Mezentseva and Rimachevskaya 1990). Ukrainian public health experts became accustomed to holding an authoritative status in policymaking. As the measles and rubella (MR) campaign has shown, they resented policies originating abroad that did not incorporate their voice.

Since Perestroika years in the 1980s and dissolution of the Soviet Union in 1991, Soviet health care has been experiencing serious underfunding and degradation (Field 1995). Today, Ukraine continues to use the state-sponsored and centralized Soviet health care model mandated by the Ministry of Health. Infants and toddlers are vaccinated via pediatric clinics, schoolchildren via schools, and children not attending such institutions at home by district pediatricians. All mandatory vaccinations are free of charge. The Constitution of Ukraine dictates that the state has a legal responsibility for ensuring free and universally accessible health care (Constitution of Ukraine 1996:Article 49). Currently, only about 4 percent of the Ukrainian GDP is spent annually on health care (Bezrukov 2003), compared to the 8 percent recommended by the WHO. Because health care is state sponsored, it is especially influenced by the political instability permeating the country. In the past five years, four Ministers of Health have replaced each other at this post. None of them made much headway in implementing health care reforms (Bobrov 2006). Ukraine is experiencing a mortality crisis with the average life expectancy 73 years for females and 67 years for males, which is on average 11.76 years less than in Western Europe. Ukraine's population has fallen by five million since independence, with fertility rates ranking as one of the lowest in Europe. As prices for pharmaceuticals, medical supplies, and energy skyrocket, "free" health care is essentially substituted by the informal fee-for-service system. It is estimated that over 50 percent of all health care financing originates from unofficial and quasi-formal payments (Polischuk 2006). Informal exchanges have been shown to have internal logic and demonstrate innovative approaches to solving

nascent problems (Ledeneva 1998; Lovell 2005), and many providers interviewed for this study testified to that. However, just as many passionately argued that because of the inconsistent and opportunistic nature of informal practices, it is difficult for people to navigate healthcare, and this irregularity fuels conflicts between providers and patients. A heavy reliance on informal practices is a testament to the failure of the formal institutions to satisfy the needs of most participants of the system. People in need of medical help often strive to develop personal relationships with physicians to ensure the best health outcomes (Rivkin-Fish 2005; Temkina and Zdravomyslova 2008). Health care administrators, physicians, and patients testify strongly in newspapers, on my interview tapes, and on television screens that health care is not accessible to all and does not always offer high-quality service.

Reports as early as the late 1980s document decreasing satisfaction with medical services and sinking public support for vaccinations, citing such reasons as a low incidence of vaccine-preventable diseases that suggested immunization was unnecessary, unfavorable press coverage, and distrust of government (Vitek and Wharton 1998). Today, this pattern continues. As the former main sanitary inspector of Ukraine, Mykola Prodanchuk stated, "Unfortunately, Ukraine faces a tremendous crisis of distrust for authority and its institutions, including the Ministry of Health" (Skrypnyk 2008). Little did he know that within several months, the death of Anton Tyschenko during the vaccination campaign that he was promoting would strip him of his office.

Vaccination Scare

Although the Soviet Union was overall successful in immunization (Akmatov et al. 2007; Hoch 1997), measles may never have been under control. For example, in the USSR there were 466,000 cases of death from the disease in 1982, compared to 1,700 cases in the United States in the same year (Brinton and Ladyzhensky 1992). The rubella vaccination was never on the Soviet national vaccination schedule. Ukraine had an outbreak of measles and rubella in 2005 and 2006, when over 46 thousand people were infected and four died; 80 percent of them were of school and college age (Polevska 2008:15[221]). A case-control study conducted in Eastern Ukraine in 2008 (Velicko et al. 2008) showed the measles vaccine effectiveness at 93 percent, which is an insufficient population immunity for firm measles control. Similar outbreaks were reported in Georgia (Doshi et al. 2009), Kazakhstan (Akmatov et al. 2007), and Kyrgyzstan (Weeks et al. 2000) since the end of the Soviet era. None of the studies were able to conclusively demonstrate causes of the outbreaks, but most of them highlighted inadequate vaccination storage and transportation (cold chain problems), the extensive number of acceptable contraindications in the Soviet Union, which may have significantly decreased immunized population, and falsified vaccination records.

Given this unsatisfactory record of measles and rubella resistance, Minzdrav, at the WHO recommendation, designed its mandatory immunization campaign with aims to immunize 95 percent of young people, 15 to 29 years of age, at a cost of $5.3 million allocated from the WHO budget (Figure 2).[4] Given Ukraine's European Union membership ambitions at the time and preparations to host the European Soccer Cup in 2012, a clear epidemiologic situation has become a matter of national

Figure 2. Posters circulating in various public spaces announcing the mandatory measles and rubella immunization campaign.

importance. Even before the campaign commenced, the Ukrainian press was filled with ominous warnings. Newspapers regurgitated previous vaccination scandals in the country, such as the April 2006 case of TB testing in Vinnytsia region when 35 children suffered from the substance that they were tested with, and several have allegedly developed life-threatening diseases, such as hepatitis and lung cancer.

Although Minzdrav argued that the frequency of vaccination side effects registered in Ukraine was below the average recorded by the WHO and that the benefits far exceed risks, the population hardly took any word of Minzdrav as genuine. In May 2008, major Ukrainian newspapers and news channels were filled with details of Anton Tyschenko's death, a teenager from Kramatorsk in Eastern Ukraine. The 17 year old was vaccinated against MR in school. He developed severe headaches later that day, and was taken into the emergency room where he died in the early morning hours of the next day. His family was not warned about the severity of his condition. They were not by Anton's bedside when he passed away. The scandal of Anton's death intensified public dissatisfaction with immunization policies. Public protests at Minzdrav doors, discussions of Ukrainian biomedical experts widely publicized in the press, as well as extremely negative media coverage together brought the MR campaign to a halt immediately after Anton Tyschenko passed away.

In the course of the subsequent investigation, Minzdrav found itself scrambling to defend the MR campaign. The public health officials argued that the India-based pharmaceutical company Serum Institute of India Ltd.[5] was chosen according to WHO regulations (Mark Danson, Director of WHO European Bureau, 2008:24[87]). The vaccine has been successfully used all over the world since 2002 (*Kyiv Weekly* 2008:18[293]). Furthermore, the officials suggested, no evidence shows this product is linked to a statistically significant number of side effects that would warrant its withdrawal from the Ukrainian market. Despite weak evidence, the Prosecutor General's office fired Mykola Prodanchuk, the main sanitary inspector of Ukraine, who was responsible for the vaccination campaign, on the grounds of signing a one-time deal to deliver the vaccination material without its prior registration in Ukraine (*Medvedko* 2008:23[312]). According to official Ministry of Health regulation on organization and administration of prophylactic immunization (03.02.2006 No 48), vaccination must be conducted only with preparations that have been officially registered in Ukraine. Because the MR vaccination preparation was donated by the WHO, it did not go through the usual stages of product testing and registration. The health care providers in this study talked about Prodanchuk's dismissal as a political maneuver. They thought it was a reflection of competition between the president at the time, Victor Yuschenko, and Prime Minister Yulia Tymoshenko, who were competing to secure loyal officials before presidential elections (Kniazevych 2008).[6]

When asked to elaborate on their experiences of the MR campaign and vaccination practices in general, providers spoke of their navigation of vaccine anxieties, fearful parents, and public health officials insisting on high immunization rates, which reflected their quandaries about medical authority in a postsocialist milieu.

Providers' Nonadherence as Expression of Professionalism

Ivanna is in her early fifties and has worked as a main regional pediatrician in a town in central Ukraine for more than a decade. She is a single mother to a freshman in college, and has close relationships with her parents. Ivanna has a modest income, but enjoys powerful connections and a great reputation as an expert in pediatrics. Recently, she relocated to Kyiv to work in a specialized clinic for children with advanced AIDS. This pediatrician developed her own vaccination methodology that she employed to navigate the rigid national vaccination schedule and questionable vaccination manufacturers. She reminisced about what she called "the simpler Soviet times" when, in her view and the view of many other informants, vaccines were the most reliable. Medical reactions to the vaccines were predictable, and she knew how to handle them. Like Ivanna, many providers associated vaccination campaigns with the ruthlessness of the open market, which triggered the appetites of those in power to accept kickbacks from pharmaceutical companies instead of paying attention to strict quality standards. When it comes to immunizations, many respondents considered Soviet times to be safe and predictable, rather than a time when their bodies were under the ultimate state control. Providers that practiced

medicine under the Soviet administration recollected the pressure of being held responsible for health outcomes of their patients, which included arduous house calls and phone conversations to ensure compliance with health policies. Although they resented these experiences, they also felt that these practices were still ongoing in Ukraine.

Ivanna often recommended postponing vaccination if she deemed her patient too weak to withstand it. She also vaccinated *pid prykryttiam* (taking extra precautions), for example, injecting the vaccine in combination with an anti-allergic medication, such as the Ukrainian version of Benadryl (diphenhydramine hydrochloride). Ivanna chastised some overzealous pediatricians who pushed for vaccinations without taking a close look at the child, and she was also critical of the public health administration *(sanstantsiya)*[7] that insisted on reaching 100 percent immunization rates. She struggled with tailoring her reports and double bookkeeping, but she felt they were in the best interests of her patients. In her own words:

> Every month we submit vaccination reports to sanstantsiya. It is a very close monitoring, and paperwork beyond any words. The criteria are strict: if the rest of the regions showed 100 percent vaccination compliance, why did we report only 99 percent? I just could not raise my hand and vaccinate certain children. I would report 100 percent compliance, and then would follow up on the kids who were left out initially. Everybody is doing this, everybody lies. This statistic does not reflect the real situation, because if we tried to follow the 100 percent vaccination compliance requirement, we would have so many side effects and complications! Public health officials are not clinicians, and they do not understand our concerns, what we observe with our own eyes. . . . So I had to start hiding children without vaccinations from our reports. I would record that the child got vaccinated, and then return to her in a month or two. I knew every child in my neighborhood, and I had two notebooks for the statistics—one for me, and the other one for sanstantsiya.

In her account, Ivanna focuses on her nonadherence to the national vaccination schedule as an expression of her professionalism, clinical knowledge, and concern for the patient. She contrasts her expertise with the motivations of public health administrators who crunch numbers instead of expressing genuine health concerns. Like Ivanna, physicians occupy a precarious position in postsocialist states (Riska and Novelskaite 2008; Rivkin-Fish 2005). They work in a state-run system, and resent the substandard recognition of their work, as reflected in their low salaries.[8] Their relationship with state officials and hospital administrations are often fraught with conflict, which is important to establish for discussing physicians' vaccination repertoires. Providers are actively trying to carve out a lucrative niche for themselves through participation in a range of money-making activities, such as informal payments; combining several jobs; working in burgeoning private clinics, labs, and diagnostic centers; working for the pharmaceutical companies or in cooperation with the pharmaceutical companies; working for clinical research trials; and engaging in entrepreneurial activities outside of the biomedical sphere. These efforts are

often deemed immoral by the general public and the local press. Yet, this informal economy in medical facilities is gradually becoming acceptable and expected. Although resentful at times, patients participate by offering informal payments to their physicians in hopes of establishing a new directionality of influence and receiving better care. At the same time, physicians have increasingly come to measure their professional success and qualifications in monetary terms. Personalized networks were also prominent in Soviet health care,[9] but medical workers are increasingly switching to monetary exchanges as the preferred form of remuneration for the services provided. Neo-Marxist studies of medical work that imbue the economic processes with deterministic qualities often argue that, because the health care field has been state sponsored in socialist and many postsocialist states, physicians have essentially become bureaucratic employees instead of organized professionals (Riska 2001; Schecter 1997). In contrast, Rivkin-Fish has noticed (2005) that physicians are often intent on separating themselves from their health care administrators, whom they view as state bureaucrats, rather than productive contributors to the health care system. Remembering their dissatisfactions with the Soviet health care system and feeling disappointed in the democratic market, people prefer to rely on personal strategies and personalized networks to achieve desired health results. Indeed, health has become a "site for conceptualizing and implementing a renewed social order" (Rivkin-Fish 2005).

The contentious relationships between physicians and the state provide a context for understanding the providers' general concern about the quality of the vaccines and their partial belief in and circulation of various ominous stories pertaining to negative side effects of vaccinations. My respondents repeatedly discussed the alleged greediness of the state officials, who, they believed, were willing to compromise the lives and health of citizens for kickbacks from pharmaceutical companies and a glossy image of disease-free European nation. They routinely suggested that Minzdrav was involved in financial schemes whereby it purchased low-quality MR vaccination material in exchange for kickbacks *(otkat)*.[10] Many providers portrayed public health policy makers in Minzdrav not as knowledgeable experts, but as money hungry pseudoexperts with dollar signs in their eyes.

In our interviews, providers often responded with emotional outbursts that poignantly criticized state officials. Their voices reflect experiences of what Paul Farmer (1999) calls "structural violence," which serve as a precursor to infections and inequalities. These providers are among many others who view the state as unjust and hypocritical. Their rejection of the official vaccination narrative testifies to a power imbalance and a demand for meaningful social changes that would improve their quality of life in real ways as opposed to assigning responsibility for change to individual bodies. Das and Poole (2004) suggest "illegibility" of state practices as a term that captures the ways in which state practices have become unintelligible to the people on whom they are forced. Vaccination policies are experienced by Ukrainians in many ways as illegible or self-serving. Although state regulations are embodied in the law (Asad 2004), people find them quite distant in their everyday lives. Their problems are rarely resolved, and state bureaucracy seems irrelevant. At the same time, state policies are sometimes overwhelming when they come crashing into people's lives, as the mandatory vaccination campaign did. Coming from a

discredited state, the purposes of the campaign seemed unreadable, so the population and providers ascribed their own varying meanings to them.

Whose Expertise Counts?

In an increasingly interconnected world, vaccination refusals should be understood not only as renegotiation of biomedical authority in the context of changing relationships between the citizens and the state but also as postsocialist citizens' reimagining and repositioning themselves in the global arena. Vaccinations crosscut the global and local, for they are "produced, distributed and monitored within systems that are … globalized. … At the needle point, the most global meets the most personal of worlds" (Leach and Fairhead 2007:2). A majority of the providers whom I interviewed supported immunization as an effective public health vehicle, but they were not convinced of the utility of the MR campaign and questioned the applicability of the WHO expert knowledge in the Ukrainian context. Specific concerns included doubts about the vaccine quality, because it had no prior registration and testing in Ukraine. Local experts also pointed to unusually high incidences of side effects, potentially aggravated reactions to the vaccine because of allergization and the hyperactive immune systems of the Ukrainians who live in the underresearched post-Chernobyl environment, as well as potentially unsuitable antigens contained in the Asian-produced vaccine. Already feeling excluded by the international biomedical community because of their relatively disempowered status in the global professional arena and fearful of losing influence even at home,[11] Ukrainian biomedical specialists expressed many doubts about the MR campaign. Their concerns were often narrated during our interviews along two lines: the belief that biomedical products manufactured in India or other "Third World" country cannot possibly be of good quality, but are instead unsanitary; and the belief that foreign policy makers, including the WHO, view Ukrainians as an immunization umbrella for Europe whose bodies could be used to create a barrier to infection flow from East to West. Vaccine quality allegations against the Indian-based pharmaceutical company reflect racial anxieties shared by many Ukrainians. In this process, vaccine becomes effectively racialized; that is, ethnically and nationally based qualities become ascribed to this biomedical product, and the overarching vaccination policies become linked to foreign motivations as opposed to local public health needs.

Ukrainian ethnic composition has been relatively monolith, with 73 percent of all residents identifying as Ukrainians, 22 percent as Russians, 1 percent as Jewish, and 4 percent as others (Ukrainian Consulate General in NY 2011). In the recent years, Ukraine has been a magnet for emigration, which significantly diversified its population. People displaced by military conflicts in Afghanistan, Iraq, and Caucasus have come to Ukraine, as well as increasing number of migrants from Vietnam, China, and Africa (Ruble 2008). As the Ukrainian state is struggling to piece to together a nation-branding project that would unify the country, nationalist sentiments are bountiful in public discourse. Sometimes, they take the form of ethnically based discrimination and a fear of difference.

Racialized anxieties about vaccine safety should be viewed not just as a Soviet legacy of envisioning Russian ethnicity at the apex of social hierarchy, which

brings to light the declarative nature of Soviet internationalism ideology. Open borders and active engagement with multiple international agents in economic, political, and social realms create the need to establish new types of social hierarchies. Acutely aware of the global redistribution of power, many Ukrainians cling to the First and Third World categories, adamantly positioning themselves above the so-called Third World countries and rejecting their position as second-class Europeans. Racial categories are not just about the vaccination serum; rather they are "crucial sites for producing notions of modernity, nation, state, and citizenship" (Briggs 2005). Although Ukrainian society must situate itself in the international arena, facing differences unlocks new anxieties. Ideas of cleanliness are equated with civilization and progress, while underdevelopment is equated with contagion. In his foundational piece, Briggs (2005) argues that communicability has a double meaning of fear of contamination or contagion, but also the need to communicate and interact. People associated with certain sites are constructed as "communicable loci"—some become producers of knowledge (the postindustrial core), and others (developing or underdeveloped communities) become "biomedical citizens"—able only to receive information and become complying sanitary subjects or be branded as dangerous unsanitary subjects. Although the USSR used to enjoy the status of one of the WHO leaders, Ukraine's status has since been reversed to a recipient of foreign aid. Themselves excluded from producing authoritative epidemiological knowledge in the global biomedical arena, Ukrainian physicians in their turn limit India's credulity in the communicability circle, whom they see as a producer of virus, not knowledge.

Rights and Responsibilities of Doctors and Patients

The widespread reinterpretation of state policies according to personal experiences and local community needs by physicians does not, nevertheless, mean that physicians conceptualize their patients' rejection of vaccinations as an attempt to renegotiate their position in power structures or "re-theorize their bodies in light of their own experience and knowledge" (Emke 1992). More often than not, my physician respondents looked at their patients' vaccination refusals as a misunderstanding of biomedical concepts and misuse of their postsocialist freedoms.

Uliana and Valentyna, the heads of two pediatric units at Bay clinic presented in the introduction, suggest that nearly half of the parents today are hesitant about the mandatory vaccination schedule currently operating in Ukraine.[12] According to them, parents are disillusioned with the course of postsocialist reforms and question the centralized Soviet-style health care system that operates in Ukraine today. Many refuse even the most vital vaccinations. Compared to the usual 45–50 percent vaccination rate of six-year-olds at Bay clinic in previous years, for the same time of year in 2008 the clinic only had a 33 percent rate to show, according to Valentyna:

> Parents started to refuse all vaccinations. If they just about hear the word "measles"—they panic. We are trying to explain, . . . but parents do not believe us! Since May, our vaccination rates have been declining. We have seriously hurt ourselves with this campaign. . . . People do not understand

> that because a large percentage of population is properly vaccinated we now have more or less safe life. When this (immunized) population passes away and the unvaccinated youngsters grow up, we will see everything: typhus, measles, diphtheria, you name it.

Uliana and Valentyna, as many other doctors whom I met during field research, framed their quandaries about vaccination in terms of changing ideas about rights and responsibilities of doctors and patients. They were resentful of the loss of their authority in the eyes of the patients and having to talk them into vaccinating their children. Struggling to come to terms with the increasing gap between their official salary and the incomes of many of their newly rich patients, physicians argued that their patients quickly adopted the discourse of fighting for their rights, at the same time failing to take on responsibility for their health. These providers often placed vaccination anxieties into the same category as other risky behaviors, such as frequent parental smoking and drinking in the presence of their children. They argued that physicians' newly impoverished position where their work is reimbursed so poorly by the state serves as an invitation to their patients to doubt their medical skills and knowledge. Changing morality and new freedoms were thus employed by health care workers to partially make sense of the parental refusals of vaccinations. They explained that hysteria created by the media found fertile ground in parents who knew little about biomedicine, doubted medical authorities, distrusted the state, and felt entitled to improved treatment.

Providers did not agree with the MR campaign and did not envision themselves as workers of the state. Vaccination anxieties of their patients were "troubling" for them, rather than simply "troublesome" (Conrad 1987), precisely because they reflected dissatisfaction not only of the patients but also their own. At the same time, they did not feel solidarity with the patients who had similar doubts about the MR campaign. Instead, they rationalized their actions as professionalism, divorced from political agendas and qualitatively different from patients' anxieties.

Domestic Vaccination Politics

As Ivanna's, Uliana's, and Valentyna's stories demonstrate, physicians craft their own "protocols" in regard to the state-mandated vaccination schedule. Many confessed to a "creative writing" of the medical records. Many others did not support the MR campaign and tried to stall it on an administrative level, such as Lev. Lev has worked as a municipal health care administrator in a town in central Ukraine for over 20 years. He is in his mid-fifties and earns a comfortable living at his current job and as a local expert in a wide range of national public health projects.

When Minzdrav announced the MR campaign, Lev and other administrators in his office did not agree it was necessary for their region. During the 2006 outbreak, only military cadets who lived in shared quarters were infected. A cadet from a different city was identified as the source of the infection. The town administrators argued that there was no epidemiologically based need to conduct a large-scale mandatory vaccination campaign in their region. Additionally, back in 2006 the town already carried out an MR vaccination campaign on the local level.

Witnessing highly politicized public discontent, Lev and the other local public health administrators were each doing their part to put the brakes on the campaign every step of the way. Eventually, the campaign was cancelled by Minzdrav, and the town did not administer a single dose of the vaccine.

Lev explained this disjuncture between the national public health policies and local knowledge of the epidemiologic situation by the Soviet legacy of sticking to the plan at all costs, and a lack of basic epidemiological knowledge and statistics skills on the part of politically influential bureaucrats:

> A 100 percent vaccination rate is never possible because people get sick, they migrate, some have medical contraindications, and some are simply non-compliant. If at a given time I have a population of 10,000 that really resides in my area, but I am asked to submit vaccination reports for 11,000 . . . it is not a reasonable plan. These watchdogs of the Plan (respondent's emphasis) are a very serious problem. It is completely absurd! . . . Do not trust any statistical information that is locally "cooked." Mortality rates, some other intensive care indicators are more or less reliable, but not the analytical data. Because they are gathered and analyzed in an absolutely absurd, illiterate way. If I pulled these kinds of tricks in med school, I would have never graduated! All this speaks to the "cadres' politics," when people without basic skills and knowledge occupy positions of power. Look at this current MR situation. This is not somebody trying to wipe out the Ukrainian nation or making money. This is a simple case of dilettantism [*obolduistvo*], of the ignorance of people in important positions. It is unprofessionalism of the highest caliber.

Lev's commentary illuminates the role of community-level public health actors and their interpretations and implementation of the policies. These local agents of the state are prepared to make personalized decisions in accordance with their professional, clinical, and personal experience, for better or worse. In his account, Lev dismisses both the racialized vaccination anxieties and the moral handicaps of powerful leaders, instead emphasizing structural problems in the health care system and political, rather than professional, choice of administrators, which in his view leads to disastrous public health failures. He points to continuities with Soviet-style management, where emphasis on achievements was more important than the actual state of affairs. Officials in managerial positions are pressured to produce excellent indicators, instead of reporting on the difficulties.

In their self-regulation of vaccination schedules (Trostle 1988), providers do not reject the "gaze of the medical authority" (Foucault 1973) and biomedical science in general. What they resist is the politics of public health that are increasingly implicated in untrustworthy global markets. Lev's story highlights providers' mediating status in the circulation of biomedical knowledge who weave "narratives of their own choosing from the threads of local and global vernaculars creating spaces of dialogue and debate, cooperation and contestation" (Ismail Beben 2010).

Conclusions

This article has highlighted the ways in which the knowledge of infection and protection against it circulated in Ukraine, the ways in which it was shared, and the ways in which it was contested. Many Ukrainians have expressed anxiety about 2008 measles and rubella vaccination campaign because it originated in foreign power structures, was connected in the minds of the health care providers and general population to political games, rather than real public health need, and used the Soviet-style mandatory implementation rhetoric. The MR campaign reflects vaccination anxieties in postsocialist context in general.

The Ukrainian health care system has inherited Soviet immunization policy that emphasizes public good and state control as opposed to individual wants and needs, and envisions domestic biomedical specialists as experts in the global arena. These meanings appear anachronistic today and do not resonate with the local population and open market. Racialization of vaccine has influenced the MR campaign by conceptualizing the manufacturer as a possible producer of the virus, but not the cure. Ukraine receded from its former status of producer of knowledge as a Soviet republic and has instead moved into the locus of recipient of information facing the choice of either submitting to foreign expertise or being deemed an unsanitary subject.

Health care providers partially share vaccination anxieties with the general population in their belief that the state officials are self-serving and not to be trusted. With their formal salaries quite low, they do not feel protected as workers of the state. They are also disconcerted about descending from the status of public health experts to the status of subjects of international policies. Providers emphasize their clinical knowledge, intent on separating themselves from health care officials whom they view as state bureaucrats, rather than productive contributors to the health care system. They are willing to bend the policies according to their understanding of professionalism and personal priorities. However, physicians do not support patients who refuse vaccinations. They often link patients' anxieties to their alleged irrationality and irresponsible use of their new freedoms, thus jeopardizing population health as a whole. Providers conceive of their own anxieties as qualitatively different from those of their patients (Figure 3).

They argue that vaccinations are very important, but national campaigns should be designed and assessed not on the basis of political agenda of the government but, rather, using well-qualified and-trained specialists with knowledge of the local context.

Patients, physicians, and health care administrators have different views about what exactly constitutes their rights and responsibilities and what relationships and power each of the stakeholders in public health decisions should enjoy. Their critique of postsocialist capitalism and the Ukrainian politics of the open market is nevertheless unanimous. In the words of Ashforth (2004), vaccination anxieties have transformed "matters of public health from questions of appropriate policies into questions concerning the fundamental character and legitimacy of state power in general." Vaccination anxieties are a lens for understanding how biomedical knowledge is interpreted on the ground. Health risks are constructed not only in biological terms but also as a product of relationships among the state, providers,

Figure 3. Dilemmas of new choices. Doors to immunization office in one of the pediatric clinics with national immunization calendar next to it.

patients, and international health policy makers. Vaccination anxieties emerge in response to changing hierarchies, locally and globally.

Notes

1. See the WHO immunization profile for Ukraine: http://apps.who.int/immunization_monitoring/en/globalsummary/countryprofileresult.cfm?C=ukr, accessed September 6, 2011.

2. Ukraine is essentially a bilingual country, although Ukrainian is the only official language. For more information on Ukrainian language politics see Laada Bilaniuk's work 2005.

3. For more information about the national vaccination schedule in Soviet Union and its comparison to the U.S. vaccination schedule see Brinton and Ladyzhesky 1992.

4. This campaign falls under the WHO's larger goal to eliminate measles and rubella in the European region by 2010 (Doshi et al. 2009).

5. For more information, see the corporate website: http://www.seruminstitute.com/content/about_us.htm, accessed September 6, 2011.

6. They both lost 2010 presidential elections to Victor Yanukhovych, who is notorious as the nemesis of the Orange Revolution and as Vladimir Putin's ally.

7. *Санстанція* [sanitary-epidemiological service] is a public health service that controls the sanitary-hygienic standards of the medical facilities and most health statistics, including vaccination records.

8. An established physician may expect to make about 1,400 hryvnia ($175) per month in official salary, while a beginner about 700 hryvnia ($88; see Martynets 2008). The Ukrainian National Statistical Committee suggests that the average salary of the professionals in health care and social work was 1,975 hryvnia ($247), compared to the average of 2,629 hryvnia ($328) across all occupations in December 2010, http://www.ukrstat.gov.ua/, accessed on January 28, 2011.

9. I use the term *personalized networks,* rather than *informal networks,* to highlight the nature of relationships between physicians and patients engaging in such exchanges. These are based on personal contact established through common friends, relatives, or other channels and assume not only individualized attention in return for payment but also provider's commitment to help.

10. Some Ukrainian words are included with their corresponding translations to indicate the concepts that do not have parallels in English, but are important for understanding the context.

11. For more on the dynamic between Western and postsocialist scientists, see Rivkin-Fish (2005) and Ninetto (2005).

12. The official vaccination schedule is accessible via the Ukrainian Ministry of Health web site. The title of the document is "Наказ від 03.02.2006 № 48 Про порядок проведення профілактичних щеплень в Україні та контроль якості й обігу медичних імунобіологічних препаратів." See 2008 amendments at http://moz.gov.ua/ua/main/docs/?docID=10180, accessed September 6, 2011.

References Cited

Agol, V., and S. Drozdov
1993 Russian Contribution to OPV. The International Association of Biological Standardization 21:321–325.

Akmatov, M., et al.
2007 Determinants of Childhood Vaccination Coverage in Kazakhstan in a Period of Societal Change. Vaccine 25:1756–1763.

Asad, Talal
2004 Conclusions. *In* Anthropology in the Margins of the StateV. Das and D. Poole, eds. SAR. Oxford.

Ashforth, A.
2004 AIDS as Witchcraft in Post-Apartheid South Africa. *In* Anthropology in the Margins of the State. V. Das and D. Poole, eds. Pp. 141–165. Santa Fe, NM: SAR.

Bezrukov, V.
2003 Long-Term Care in Developing Countries.Brodsky et al., eds. Geneva: WHO.

Bilaniuk, Laada
2005 Contested Tongues. Language Politics and Cultural Correction in Ukraine. Cornell University Press.

Blackford, J.
2001 Immunization Controversy: Understanding and Addressing Public Misconceptions and Concerns. The Journal of School Nursing 17(1):32–37.

Bobrov, O.
2006 Reformofrenia. Zerkalo Nedeli 35(614).

Briggs, Charles
2005 Communicability, Racial Discourse, and Disease. Annual Review of Anthropology 34:269–291.

Brinton, K., and A. Ladyzhensky
1992 Clinical Management of Immigrants' Immunization Histories. Nurse Practitioner 17(4):21–32.

Brown, T., et al.
2006 The World Health Organization and Transition from "International" to "Global" Public Health. American Journal of Public Health 96(1):62–72.
Brownlie, J., and A. Howson
2005 "Leaps of Faith" and MMR: An Empirical Study of Trust. Sociology 39(2):221–239.
2008 На Игле [On a Needle]. Korrespondent 8(297).
Conrad, P.
1987 The Noncompliant Patient in Search of Autonomy. Hastings Center Report 17(4):15–17.
Constitution of Ukraine
1996 Chapter II: Human and Citizens' Rights, Freedoms and Duties. Article 49. http://www.rada.gov.ua/const/conengl.htm#r2, accessed February 26, 2007.
Danson, Mark
2008. "You Are Lucky to Have This Vaccine." Interview published in Focus 2008:24(87).
Das, J., and S. Das
2003 Trust, Learning, and Vaccination: A Case Study of a North Indian Village. Social Science and Medicine 57(1):97.
Das, V., and D. Poole
2004 Anthropology in the Margins of the State. Oxford: SAR.
Doshi, Sucheta, Nino Khetsuriani, Khatuna Zakhashvili, Levan Baidoshvili, Paata Imnadze, and Amra Uzicanin
2009 Ongoing Measles and Rubella Transmission in Georgia. International Journal of Epidemiology 38:182–191.
Emke, I.
1992 Medical Authority and Its Discontents: A Case of Organized Non-Compliance. Critical Sociology 19(3):57–80.
Farmer, P.
1999 Infections and Inequalities: the Modern Plagues. University of California Press.
Feldman-Savelsberg, Pamela, Flavian Ndonko, and Bergis Schmidt-Ehry
2000 Sterilizing Vaccines or the Politics of the Womb: Retrospective Study of a Rumor in Cameroon. Medical Anthropology Quarterly 14(2):159–179.
Field, Mark
1967 Soviet Socialized Medicine. The Free Press. New York.
1995 The Health Care Crisis in the Former Soviet Union: A Report from the "Post-War" Zone. Social Science and Medicine 41(11):1469–1478.
Foucault, M.
1973 The Birth of the Clinic: An Archaeology of Medical Perception. New York: Pantheon.
Hoch, S.
1997 The Social Consequences of Soviet Immunization Policies, 1945–1980. Washington, DC: National Council for Eurasian and East European Research.
Ismail Beben, Z.
2010 Brokers of Dreams, Bearers of Change: Production, Circulation, and Consumption of Knowledge through Cultural Brokerage. Panel session presented at the American Anthropology Association. New Orleans, November 2010.
Kaufman, S.
2010 Regarding the Rise in Autism: Vaccine Safety Doubt, Conditions of Inquiry, and the Shape of Freedom. Ethos 38(1):8–32.

Kniazevych, V.
2008 Ситуация, Сложившаяся Вокруг Вакцинации Против Кори и Краснухи, на 95% Политическая (The Measles and Rubella Vaccination Has Become 95 Percent Political). News of Medicine and Pharmacy 10(245).
Koch, Erin
2006 Beyond Suspicion: Evidence, (Un)certainty, and Tuberculosis in Georgian Prisons. American Ethnologist 33(1):50–62.
Kravchenko, A., and R. Saltykov
1967 Разработка Живых Вакцин в Советском Союзе. (Development of Live Vaccine in the Soviet Union). Journal of Microbiology, Epidemiology, and Immunobiology 44(3):3–9.
Kyiv Weekly
2008 Vaccination Suspended. Kyiv Weekly, May 21–27: 18(293).
Leach, Melissa, and James Fairhead
2007 Vaccination Anxieties. Global Science, Child Health and Society. Earthscan.
Ledeneva, A.
1998 Russia's Economy of Favors. Cambridge University Press.
Lovell, D.
2005 Corruption as a Transitional Phenomenon: Understanding Endemic Corruption in Postcommunist States. *In* Corruption. Anthropological Approaches. Dieter Haller and Chris Shore, eds. Pp. 65–83. London: Pluto.
Martin, Emily
1994 Flexible Bodies. Boston: Beacon.
Martynets, S.
2008 Circular Bail. Express, August 28: 13.
Medvedko, A.
2008 Человек с Уголовным Настоящим. (A Man with Criminal Present. Prosecutor General of Ukraine). Korrespondent 23(312). 21 June.
Mezentseva, E., and N. Rimachevskaya
1990 The Soviet Country Profile: Health of the USSR Population. Social Science and Medicine 31(8):867–877.
Ninetto, Amy
2005 "An Island of Socialism in a Capitalist Country": Postsocialist Russian Science and the Culture of the State. Ethnos 70(4):443–464.
Park, A.
2008 How Safe Are Vaccines? Time. June 2.
Polevska, L.
2007 Щеплення від Кору: Турбота про Наше Здоров'я чи про Кишені Фармацевтів? (Measles Immunizations: Caring about our Health or Pharmacists' Pockets?). Vysokyi Zamok 206(3613). November 8–14.
Polischuk, M.
2006 Охорона Здоров'я в УкраїніЖ Виклики Тансформації Системи. (Health Care in Ukraine: Challenges of System Transformation). Report.
Riska, Elianne
2001 Medical Careers and Feminist Agendas. American, Scandinavian and Russian Women Physicians. New York: Aldine De Gruyter.
Riska, Elianne, and Aurelija Novelskaite
2008 Intersections in Post-Soviet Realities: (En)gendering Commitment to the Profession. *In* Gender Matters in the Baltics. Irina Novikova, ed. Pp. 109–127. Mama Cash Foundation.

Rivkin-Fish, M.
2005 Women's Health in Post-Soviet Russia. IU Press.
Ruble, Blair
2008 Establishing a Right to the Ukrainian City. Washington, DC: Woodrow Wilson International Center for Scholars.
Schecter, K.
1997 The Feminization of Poverty and Its Links to Russian Health Care. Washington, DC: National Council for Eurasian and East European Research.
Seminog, E.
2008 Ценность Вакцинации, или Какова Цена Жизни Человека? (The Value of Vaccination, or How Much Does the Human Life Cost?). Zdorovia Ukrainy 12(193):45. July.
Skrypnyk, O.
2008 Украина—Вакцинальный Зонтик для Европы. (Ukraine—Vaccination Umbrella for Europe). Zerkalo Nedeli 10(689).
Starks, T.
2008 The Body Soviet: Propaganda, Hygiene, and Revolutionary State. Madison: University of Wisconsin Press.
Temkina, A., and E. Zdravomyslova
2008 Patients in Contemporary Russian Reproductive Health Care Institutions. Demokratizatsia. 277–293.
Torgunova, A.
1967 Пути Развития Противотуберкулезной вакцинации в Советсом Союзе. (Development of Anti-Tuberculosis Vaccination in the Soviet Union). Journal of Microbiology, Epidemiology, and Immunobiology 44(12):3–7.
Trostle, J.
1988 Medical Compliance as an Ideology. Social Science and Medicine 27(12):1299–1308.
Ukrainian Consulate General in NY
2011 Basic Facts about Ukraine. http://www.ukrconsul.org/BASIC_FACTS.htm, accessed January 22, 2011.
Ukrainian Statistical Committee
2011 State Statistical Service of Ukraine. http://www.ukrstat.gov.ua/, accessed January 28, 2011.
Velicko, Inga, Luise Ledet Müller, Richard Pebody, Bernadette Gergonne, Chinara Aidyralieva, Nina Kostiuchenko, and John S. Spika
2008 Nationwide Measles Epidemic in Ukraine. Vaccine 26:6980–6985.
Vitek, C., and M. Wharton
1998 Diphtheria in the Former Soviet Union. Emerging Infectious Diseases 4(4)539–550.
Weeks, M., F. Svetlana, S. Noorgoul, and G. Valentina
2000 Improving the Monitoring of Immunization Services in Kyrgyzstan. Health Policy and Planning 15(3):279–286.
Yahya, M.
2007 Polio Vaccines—"No, Thank You!" Barriers to Polio Eradication in Northern Nigeria. African Affairs 106(423):185–204.